

In the Claims:

Please amend claim 1 as follows:

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1. (currently amended) A magneto-resistive magnetic sensor, comprising:
a magneto-resistive structure changing a resistance thereof in response
to an external magnetic field,
a cap layer, provided on a top surface of said magneto-resistive
structure;
a pair of magnetic regions disposed at both lateral sides of said magneto-
resistive structure, said magnetic regions having a magnetization pointing in a common
direction;
a pair of electrodes provided on said pair of magnetic regions so as to
oppose ~~with~~ each other across said magneto-resistive structure, said electrodes having
respective overhang parts extending over said magneto-resistive structure so as to oppose
~~with~~ each other with a gap therebetween, said pair of electrodes injecting a sensing current
into said magneto-resistive structure primarily via said top surface of said magneto-resistive
structure,
wherein each of said overhang parts covers said cap layer on said
magneto-resistive structure in such a state that an oxidation-resistant conductive layer is
interposed between said cap layer and said overhang part.

2. (original) A magneto-resistive magnetic sensor as claimed in claim 1, wherein said oxidation-resistant conductive layer is formed of a metal selected from the group consisting of Au, Pt and Cu.

3. (original) A magneto-resistive magnetic sensor as claimed in claim 1, wherein said oxidation-resistant conductive layer has a thickness larger than about 1nm.

4. (original) A magneto-resistive magnetic sensor as claimed in claim 1, wherein said oxidation-resistant conductive layer has a thickness of larger than about 3nm.

5. (original) A magneto-resistive magnetic sensor as claimed in claim 1, wherein said oxidation-resistant conductive layer has a thickness of smaller than about 10nm.

6. (original) A magneto-resistive magnetic sensor as claimed in claim 1, wherein said cap layer comprises Ta.

7. (original) A magneto-resistive magnetic sensor as claimed in claim 1, wherein said magneto-resistive structure comprises an anti-ferromagnetic pinning layer, a ferromagnetic pinned layer having an exchange coupling with said anti-ferromagnetic pinning layer, a ferromagnetic free layer, and a non-magnetic separation layer interposed between said ferromagnetic pinned layer and said ferromagnetic free layer.

8. (original) A method of fabricating a magneto-resistive magnetic sensor, comprising the steps of:

forming a magneto-resistive structure on a substrate, said magneto-resistive structure changing a resistance thereof in response to an external magnetic field;

depositing a cap layer on a top surface of said magneto-resistive structure;

depositing an oxidation-resistant conductive layer on a top surface of said cap layer, said magneto-resistive structure, said cap layer and said oxidation-resistant conductive layer forming thereby a magneto-resistive layer;

patterning said magneto-resistive layer by applying a lithographic process, to form a magneto-resistive region on said substrate;

depositing a ferromagnetic layer of said substrate to form a pair of domain control regions at both lateral sides of said magneto-resistive region;

depositing an electrode layer on said substrate such that said electrode layer covers said magneto-resistive region and said domain control regions continuously;

patterning said electrode layer to form a pair of electrodes on said pair of domain control regions respectively, such that said electrodes extend to each other over said magneto-resistive region with a gap formed between said electrodes, said step of patterning being conducted by applying an etching process to said electrode layer until said oxidation-resistant conductive layer is exposed at said gap; and

patterning said oxidation-resistant conductive layer until said cap layer is exposed at said gap.

9. (original) A method as claimed in claim 8, wherein said step of depositing said oxidation-resistant layer comprises the step of depositing an Au layer as said oxidation-resistant layer, and wherein said step of patterning said oxidation-resistant layer comprises a reactive-ion etching process.

10. (original) A method as claimed in claim 8, wherein said step of depositing said cap layer comprises the step of depositing a Ta layer as said cap layer, and wherein said step of patterning said cap layer comprises an ion milling process.

11. (original) A method as claimed in claim 8, wherein said step of patterning said oxidation-resistant layer and said step of patterning said cap layer are conducted by an ion milling process.

12. (original) A method as claimed in claim 8, wherein said step of patterning said oxidation-resistant layer and said step of patterning said cap layer are conducted by using a common resist mask.